

CLAIMS

1. A method for allocating memory for use by time sensitive data communications processing, the method comprising the steps of:

5 establishing a base memory block;

accepting a request for a memory buffer, wherein the request comprises a specification of a buffer size for the memory buffer;

determining if the base memory block contains sufficient memory for the memory buffer; and

10 allocating, in response to a determination that there is insufficient memory within the base memory block, an additional memory block that is at least as large as the buffer size and wherein the additional memory block is not required to form a contiguous memory section with the base memory block.

15 2. The method according to claim 1, wherein the base memory block, the additional memory block and the memory buffer are located within pinned kernel memory.

20 3. The method according to claim 1, wherein the additional memory block is accessed through a linked list structure.

4. The method according to claim 1, wherein the additional memory block has a predetermined size.

25 5. The method according to claim 1, wherein the request for the memory buffer is received from a mass storage data server application processing module.

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6. The method according to claim 1, further comprising the steps of:
accepting a subsequent request for a second memory buffer, wherein the
subsequent request comprises a second specification of a second buffer size for the
second memory buffer;
- 5 determining if the base memory block and the additional memory block
contain sufficient memory for the second memory buffer; and
allocating, in response to a determination that there is insufficient memory
within the base memory block and the additional memory block, a second additional
memory block that is at least as large as the second buffer size and wherein the
10 second additional memory block is not required to form a contiguous memory
section with either the base memory block or the additional memory block.

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7. A method of releasing memory allocated to a memory pool, wherein pinned memory buffers are temporarily allocated and not relocated within the memory pool and wherein additional memory block are sequentially added to the memory pool, the method comprising the steps of:

- 5 periodically examining a set of last two memory blocks to determine if at least one memory buffer is allocated therein; and
 releasing a last added additional memory block if the step of periodically examining determines that there are no memory buffers allocated within the set of last two memory blocks.

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8. A system for allocating memory for use by time sensitive data communications processing, the system comprising:

a kernel memory; and

5 a kernel memory allocation module, communicatively coupled to the kernel memory, wherein the kernel memory allocation module:

establishes a base memory block within the kernel memory;

accepts a request for a memory buffer, wherein the request comprises a specification of a buffer size for the memory buffer;

10 determines if the base memory block contains sufficient memory for the memory buffer; and

allocating, in response to a determination that there is insufficient memory within the base memory block, an additional memory block within the kernel memory that is at least as large as the buffer size.

15 9. The system according to claim 8, wherein the base memory block, additional memory block and the memory buffer are located within pinned kernel memory.

10. The system according to claim 8, wherein the additional memory block does not form a contiguous memory block with the base memory block.

20 11. The system according to claim 8, wherein the additional memory block is accessed through a linked list structure.

12. The system according to claim 8, wherein the additional memory block has a predetermined size.

25 13. The system according to claim 8, wherein the request for the memory buffer is received from a mass storage data server application processing module.

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14. The system according to claim 8, wherein the pinned memory buffers are temporarily allocated and not relocated within the memory pool and wherein additional memory block are sequentially added to the memory pool, and wherein the kernel memory allocation module further:

5 periodically examines a set of last two memory blocks to determine if at least one memory buffer is allocated therein; and

 releases a last added additional memory block if the step of periodically examining determines that there are no memory buffers allocated within the set of last two memory blocks.

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15. The system according to claim 8, wherein the kernel memory allocation module further:

 accepts a subsequent request for a second memory buffer, wherein the subsequent request comprises a second specification of a second buffer size for the second pinned memory buffer;

 determines if the base memory block and the additional memory block contain sufficient memory for the second memory buffer; and

 allocates, in response to a determination that there is insufficient memory within the base memory block and the additional memory block, a second additional memory block that is at least as large as the second buffer size.

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16. A computer readable medium including computer instructions for allocating memory for use by time sensitive data communications processing, the computer instructions comprising instructions for:

establishing a base memory block;

5 accepting a request for a memory buffer, wherein the request comprises a specification of a buffer size for the memory buffer;

determining if the base memory block contains sufficient memory for the memory buffer; and

10 allocating, in response to a determination that there is insufficient memory within the base memory block, an additional memory block that is at least as large as the buffer size and wherein the additional memory block is not required to form a contiguous memory section with the base memory block.

15 17. The computer readable medium according to claim 16, wherein the base memory block, additional memory block and the memory buffer are located within pinned kernel memory.

20 18. The computer readable medium according to claim 16, wherein the additional memory block is accessed through a linked list structure.

19. The computer readable medium according to claim 16, wherein the additional memory block has a predetermined size.

25 20. The computer readable medium according to claim 16, wherein the request for the memory buffer is received from a mass storage data server application processing module.

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21. The computer readable medium according to claim 16, further including computer instructions for:

accepting a subsequent request for a second memory buffer, wherein the subsequent request comprises a second specification of a second buffer size for the
5 second pinned memory buffer;

determining if the base memory block and the additional memory block contain sufficient memory for the second memory buffer; and

allocating, in response to a determination that there is insufficient memory within the base memory block and the additional memory block, a second additional
10 memory block that is at least as large as the second buffer size and wherein the second additional memory block is not required to form a contiguous memory section with either the base memory block or the additional memory block.

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22. A computer readable medium including computer instructions for releasing memory allocated to a memory pool, wherein pinned memory buffers are temporarily allocated and not relocated within the memory pool and wherein additional memory block are sequentially added to the memory pool, the computer

5 instructions comprising instructions for:

periodically examining a set of last two memory blocks to determine if at least one memory buffer is allocated therein; and

releasing a last added additional memory block if the step of periodically examining determines that there are no memory buffers allocated within the set of
10 last two memory blocks.

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